Assessing Job Flows Across Countries: The Role of Industry, Size and Regulations

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Abstract

This paper reviews the process of job creation and destruction across a sample of 16 industrial and emerging economies over the past decade. It exploits a harmonized firm-level dataset drawn from business registers and enterprise census data. The paper assesses the importance of technological factors that characterize different industries in explaining cross-country differences in job flows. It shows that industry effects play an important role in shaping job flows at the aggregate level. Even more importantly, differences in the size composition of firms – within each industry – explain a large fraction of the overall variability in job creation and destruction. However, even after controlling for industry/technology and size factors there remain significant differences in job flows across countries that could reflect differences in business environment conditions. In this paper, we look at one factor shaping the business environment, namely regulations on hiring and firing of workers. To minimize possible endogeneity and omitted variable problems associated with cross-country regressions, we use a *difference-in-difference approach*. The empirical results suggest that stringent hiring and firing costs reduce job turnover, especially in those industries that require more frequent labor adjustment. Regulations also distort the patterns of industry/size flows. Within each industry, medium and large firms are more severely affected by stringent labor regulations, while small firms are less affected, probably because they are partially exempted by such regulations or can more easily circumvent them.

Keywords: gross job flows, firm dynamics, product and labor market regulations, firm-level data

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1 Introduction

Over the past decade, a growing body of evidence has accumulated suggesting that the reallocation of factors of production – including labor – plays a major role in driving productivity growth (see e.g. Olley and Pakes (1996), Griliches and Regev (1995), Foster et al. (2001,2002), and Barlesman et al. (2004)). New firms enter the market and create new jobs, while other unviable firms exit the market contributing to job destruction. Incumbent firms are in a continuous process of adaptation in response to the development of new products and processes, the growth and decline in markets and changes in competitive forces (Davis and Haltiwanger (1999)). Market conditions and institutional factors play a major role in shaping the magnitude of job flows and their characteristics (Davis et al. (1996)). For example, smaller businesses are inherently more dynamic, in part because they tend to be young ventures and adjust through a learning by doing process (Dunne et al. (1988, 1989)). In addition, some industries have inherently higher job flows (e.g., the retail sector) than others in all countries, given the lower size of their typical business and lower inherent entry costs.

Technological and market-driven factors are coupled by a host of regulations in driving job flows. For example, regulations affecting start-up costs or bankruptcy procedures are likely to affect firm turnover and the associated labor mobility. Likewise, employment protection legislation may stifle labor reallocation by raising labor adjustment costs. Assessing the role of regulations in affecting job flows, over and above that played by technological and market driven factors is of great importance. While labor reallocation is indeed important to promote productivity growth, it is also painful for the affected workers, who face significant search and other adjustment costs (see, e.g., Mortensen and Pissarides (1999), and Caballero and Hammour (2000b)**)**. Several models predict that labor regulations reduce gross job flows (e.g. Bertola (1992), Hopenhayn and Rogerson (1993)), but the empirical evidence is still inconclusive. While several empirical papers find a negative effect of employment protection legislation on unemployment turnover (Bentolila and Bertola (1990), Nickell and Layard (1999)), the effects on job reallocation are more nuanced (Bertola and Rogerson (1997), Boeri (1999)): countries with different types of labor regulations are observed to have fairly similar gross job flows. The lack of a casual relationship between regulations and gross job flows at the aggregate level may be due to different elements. Stringent labor regulations may be associated with other regulatory and institutional factors that also affect job flows. For example, Bertola and Rogerson (1997) argue that countries with strict regulations also tend to have institutions that restrict the ability of firms to adjust wages in response to a shock (e.g. centralized wage bargaining). A more fundamental problem is that cross-country analyses of job flows may be flawed by severe omitted variable problems and measurement errors, including differences in the distribution of activity across sectors and size of firms as well as different cut-off points in the enterprise surveys from which job flow data are obtained.

In this paper, we draw from a harmonized and integrated firm-level dataset including 16 developed, emerging and transition economies. With these data, we explore the industry and size dimensions of the job flows in detail and relate them to institutional differences across countries.[2] To give a preview

[2] To our knowledge, the only other paper that econometrically analyzes the effects of labor regulations on gross job flows across countries is Micco and Pages (2004). Their paper exploits sectoral gross job flows data in manufacturing for 18 countries. We extend their work by also including the service sector for a sub-set of countries and, more importantly, by controlling for sector-specific differences in firm size.

of our results, we find that countries share a number of features of job flows along the industry and size dimensions. All countries are characterized by large job flows. These vary significantly and systematically across industries, pointing to technological and market-driven factors, but especially across firms of different sizes. However, there are notable cross-country differences even after controlling for sector and size effects. Thus, in the paper we develop a formal test of the links between hiring and firing regulations and jobs flows, but also test for the robustness of our results to the inclusion of other regulations affecting business operations. We use a difference in difference approach whereby we identify an industry and size class's baseline job reallocation from the U.S. data. Under the assumption that regulations in the U.S. are among the least restrictive in our sample, the baseline should proxy for the technological and market-driven job turnover in the absence of policy-induced adjustment costs. Under the additional assumption that this technological and market-driven demand for labor reallocation carries over to other countries, we assess whether industries that require more labor mobility are disproportionately affected by regulations that raise adjustment costs. The advantage compared with standard cross-country/cross-sectoral empirical studies is that we exploit within-country differences between industry/sizes based on the interaction between country and industry/size characteristics. Thus, we can also control for country and industry/size effects, thereby minimizing the problems of omitted variable bias and other miss-specifications. Interestingly, we find support for the general hypothesis that hiring and firing costs reduce turnover, especially in those industries that require more frequent labor adjustment. Regulations also distort the patterns of industry/size flows. Within each industry, medium and large firms are more severely affected by stringent labor regulations, while small firms are less affected, probably because they are partially exempted by such regulations or can more easily circumvent them.

The remainder of the paper is organized as follows. Section 2 presents our harmonized firm-level data and discusses the different concepts we have used to characterize labor reallocation. Section 3 analyzes the main features of job flows, highlighting the role of firm dynamics, sectoral and size compositions. Section 4 introduces the difference-in-difference approach used in the econometric analysis and discusses the empirical results for the baseline and policy-augmented specifications of the job flow equations. It also describes a battery of robustness tests. Finally, Section 5 provides some concluding remarks.

2 Data

Our analysis of job flows draws from a harmonized firm-level database that involves 16 industrial, developing and emerging economies (Germany, Finland, France, Italy, Portugal, United Kingdom and United States, Estonia, Hungary, Latvia, Slovenia, Argentina, Brazil, Chile, Colombia and Mexico).[3] The data collection was conducted by an active participation of local experts in each of the countries, and involved the harmonization of key concepts to the extent possible (such as entry, exit

[3] The database also includes Indonesia, South Korea and Taiwan (China) as well as the Netherlands, Canada and Denmark, Romania and Venezuela, but annual data on job flows are not available for these countries or are not fully reliable.

of firms, job creation and destruction and the unit of measurement), as well as the definition of common methods to compute the indicators (see Bartelsman et al. (2005) for details).[4]

The key features of the micro-data underlying the analysis are as follows:

> **Unit of observation:** Data used tend to conform to the following definition (Eurostat (1998)): "an organizational unit producing goods or services which benefits from a certain degree of autonomy in decision-making, especially for the allocation of its current resources." Generally, this will be above the establishment level.
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> **Size threshold:** While some registers include even single-person businesses (firms without employees), others omit firms smaller than a certain size, usually in terms of the number of employees (businesses without employees), but sometimes in terms of other measures such as sales (as is the case in the data for France). Data used in this study exclude single-person businesses. However, because smaller firms tend to have more volatile firm dynamics, remaining differences in the threshold across different country datasets should be taken into account in the international comparison.
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> **Sectoral coverage:** Special efforts have been made to organize the data along a common industry classification (ISIC Rev.3) that matches the OECD-Structural database (STAN). In the panel datasets constructed to generate the tabulations, firms were allocated to one STAN sector that most closely fit their operations over the complete time-span.

The firm-level and job flows data come from business registers (Finland, United Kingdom and United States, Estonia, Latvia, Romania, Slovenia), social security databases (Germany, Italy, Mexico) or corporate tax roles (Argentina, France, Hungary) (Table 1). Annual industry surveys are generally not the best source for firm demographics, due to sampling and reporting issues, but have been used nonetheless for Brazil, Chile, and Colombia. Data for Portugal are drawn from an employment-based register containing information on both establishments and firms. All these databases allow firms and jobs to be tracked over time because addition or removal of firms from the registers reflects the actual entry and exit of firms.

We define four size classes based on the number of firm' employees: 1- 19 workers, 20-49 workers, 50-99 workers, and 100 or more workers. We define job creation rate, job destruction rate, net employment growth, job reallocation rate, and excess job reallocation rate (also by firm status: continuing, entering and exiting firms) as follows (see also Davis, Haltiwanger and Schuh, 1996):

Job Creation Rate: $$POS_{isct} = \frac{\text{number of jobs created}_{isct}}{0.5\left(E_{isct} + E_{isc,t-1}\right)},$$

[4] Micco and Pages (2004) compiled a dataset from different country sources covering 2-digit manufacturing sector information for 18 countries. Their dataset does not include transition countries, and does not allow differentiating job flows by firm status and firm size for all the countries.

Job Destruction Rate: $$NEG_{isct} = \frac{\text{number of jobs destroyed}_{isct}}{0.5\left(E_{isct} + E_{isc,t-1}\right)},$$

Job Creation Rate (Entry): $$POS_{isct} = \frac{\text{number of jobs created by entry}_{isct}}{0.5\left(E_{isct} + E_{isc,t-1}\right)},$$

Job Destruction Rate (Exit): $$NEG_{isct} = \frac{\text{number of jobs destroyed by exit}_{isct}}{0.5\left(E_{isct} + E_{isc,t-1}\right)},$$

Net Employment Growth: $$NET_{isc} = POS_{isc} - NEG_{isc},$$

Job Reallocation Rate: $$SUM_{isc} = POS_{isc} + NEG_{isc},$$

Excess Job Reallocation Rate: $$EXC_{isc} = SUM_{isc} - \left|NEG_{isc}\right|,$$

where i represents industry, s represents size class, c represents country and t represents time. We take averages of POS and NEG, and then calculate NET, SUM and EXC.

3 Basic Facts about Job Turnover in Industrial and Emerging Economies of Latin America and Central and Eastern Europe

This section explores the main stylized facts emerging from our analysis across countries, sectors and firm size: 1) the large magnitude of job flows in all countries; 2) the significant role that firm entry and exit play in total job flows; 3) the different job turnover across firms of different sizes; and 4) the similarities in the industry ranking of job turnover across countries. We review these stylized facts in turn below also to motivate our multivariate analysis aimed at assessing the possible role of labor market regulations for job turnover and the magnitude and efficiency of the allocation of labor.

Large job turnover in all countries

Table 2 presents summary statistics for job flows across sector, size classes and countries, for the total economy. Figure 1 summarizes country level job flows and compares them across countries.

The first noticeable fact emerging from this cross-country comparison is the large magnitude of job flows in all countries. Gross job flows (the sum of job creation and job destruction) range from about 25% of total employment on average in the OECD countries, to 29% in Latin American countries and to about 30% in the transition economies. By contrast, net employment changes were very modest if not nil in the OECD and the Latin America samples, while the transition economies recorded a significant net job growth in the period covered by the data, after the substantial job losses of the early phases of the transition.

Firm dynamics plays a major role in total job flows

The second main stylized fact emerging from our analysis of job flows is the strong contribution played by the creative destruction process. Indeed, entering and exiting firms account for about 30-40 percent of total job flows. Within the OECD sample, the entry of new firms played a particularly strong role in total job creation in Finland in the 1990s (46 and 51 percent of total job creation in total economy and manufacturing, respectively), Slovenia (42 and 46 percent of total job creation) and Portugal (41 and 38 percent of total job creation). At the same time, the exit of obsolete firms also accounted for a significant fraction of overall job destruction, particularly so in Argentina (42 and 38 percent of total job destruction), Finland (39 and 41 percent of total job destruction) and Portugal (38 and 40 percent of total job destruction). In transition countries, entry was more important in the early years of transition and exit in the second half of the 1990s, both at the level of total economy and in manufacturing.[5]

The large job flows in the transition countries are not surprising. The process of transition started in the early 1990s and it included downsizing of existing firms as well as new firms emerging as the economies were moving towards a market economy. Indeed, 40.2 percent of jobs were created by entering firms in transition countries, compared to 35.4 percent in the OECD countries. In addition, job destruction due to exit represented 35.4 percent of total job destruction in the OECD countries, but only 30.5 percent in transition countries. Findings are similar if we focus only on sectors within manufacturing.

Small and large firms contribute the most to job flows

Small firms account for the vast majority of total firm dynamics in all countries in our sample. However, their contribution to overall job reallocation, while still important, is less dominant. Figure 2 presents the job reallocation rates by firm size classes. In general, job reallocation is the highest in firms with less than 20 employees, and the lowest in firms with 100+ employees. In the United States, job turnover declines monotonically with firm size, and the decline is particularly marked among large units (100+). Latin American countries follow similar patterns to those of the U.S., while the European countries, with the exception of France, have a less marked drop of job reallocation among larger units. The transition countries, on the other hand, show a steeper slope in smaller size classes, especially in the early years of transition.

The analysis of size-specific job reallocation rate should be complemented with a decomposition of the overall job reallocation by firms of different sizes. Table 3 and Table 4 present the percentage of job creation/destruction/reallocation in each size class as a share of total job creation/destruction/reallocation for total economy and manufacturing, respectively:

[5] This was especially so in Slovenia, a lot of entry occurred in the early 1990s, since private firms were few and far in between prior to that; exit did not keep up with that early on and was relatively low compared to OECD and other transition countries.

$$sX_{ijk} = \frac{X_{ijk}}{X_{ij}}$$

where i denotes country, j denotes sector and k denotes size. X stands for POS, NEG and SUM, where POS is the number of jobs created, NEG the number of jobs destroyed and SUM the total number of jobs reallocated (created + destroyed).[6]

In manufacturing, the highest share of jobs was created/destroyed/reallocated in the largest size class, 100+. At the same time, however, the second most important size class in terms of job reallocation is the first – with firms of less than 20 employees. In fact, it seems that the number of jobs created/destroyed/reallocated has a U-shaped relationship with size class in manufacturing. The importance of the smallest size class increased in transition countries over time, and the importance of the largest size class decreased.

At the level of total economy, the highest share of jobs was created/destroyed/reallocated in the smallest size class in a number of countries (Germany, Italy, Portugal, Argentina, Estonia, Latvia), followed by the largest size class. Again, similar pattern is observed for transition countries: smallest size class gained in importance over time, and largest size class lost in importance relative to the situation in the earlier years of transition.

Large disparities in job flows across industries

To assess the possible role of policy and institutions in shaping the magnitude and effectiveness of job flows, we need to identify the intrinsic need for job mobility that certain industries may have compared to others. Certain industries are exposed to greater variability in demand; may be more exposed to macro shocks; and may be facing a higher pace of technological progress that imposes more frequent retooling of the production process and the associated adjustment of the workforce. To illustrate the cross-industry variation in job flows, we have chosen U.S. sectors with the highest (wood) and the lowest (transport equipment) job flows within manufacturing and the trade sector (see Table 5). In wood, job reallocation rate was 26 percent in USA, and it ranged from only 13 percent in Germany to 37 percent in Brazil. In USA, incumbent firms were behind more than 70 percent of job reallocation, whereas in Great Britain, 53 percent of it was due to entry and exit of firms. In transport equipment, job reallocation rate was 11.9 percent in USA, and it ranged from 8.3 percent in Germany to 34 percent in Latvia. In Mexico, incumbent firms were behind more than 85 percent of job reallocation, whereas in Slovenia, almost 53 percent of it was due to entry and exit of firms. In trade and restaurants sector, job reallocation ranged from 22.2 percent in Slovenia after 1996 to 38.8 percent in France. In all of the countries, this was mostly due to incumbent firms, but their share differs between countries.

[6] Note that for Chile, Colombia and France, we do not observe some of the smallest firms (in the first two countries, we do not observe firms with less than 10 workers, and for France, firms with sales below a given threshold are excluded from the sample.

The correlation of industry job flows across countries

The next step in our investigation is to look at the correlation of industry/size-level job flows across countries. A strong influence of market-driven and technological factors in shaping industry job flows should result in a strong correlation across countries. However, as we will see below and stressed in previous studies (e.g. see Micco and Pages (2004)), industry job flows are also influenced by the policy and institutional environment. Lack of correlation may not therefore imply that market-driven and technological factors do not play a significant role, but rather that policy and institutions distort job flows. Job flows are part-and-parcel of the creative destruction process, and an unfavourable institutional environment will cause this process to stagnate (Caballero and Hammour (2000a)). To minimize the possible interference of the policy environment, we also present the rank correlation of industry job flows that would provide a better proxy for the true correlation under the assumption that, while affecting the levels, the policy environment does not change the rank order of industry flows.

Table 6 presents the industry/size pairwise correlations for several flow indicators using the U.S. as the benchmark: gross job reallocation, excess job reallocation, job creation by entering firms and job destruction. We use 2-digit industry and four size classes. It is noticeable that the cross-country correlations are very high for most countries. Focusing on gross job reallocation, the correlation between the EU average and the USA is 0.71; that between LAC countries and the U.S. is 0.83 and that for transition countries is 0.71. Rank correlations (Table 7) are slightly lower for some Latin American countries and higher for the others, but are on average still the highest. Correlations are on average higher if we focus only on manufacturing (not reported here). Industry-level correlations are particularly strong for some LAC countries, e.g. Brazil (0.90) and Colombia (0.91), despite the very different degree of economic development and technological factors, as well as for Great Britain (0.84). Some of the lowest correlations are found for some EU countries, in particular France (0.47).[7]

It is also interesting to see that transition economies had a much stronger correlation of their industry job flows with the U.S. in the sample that covers the entire sample period of the 1990s, than in the sample focusing on the 1996-2001 period. This could be surprising, since the early phases of transition were characterized by massive job reallocation and the rather unique need to change the structure of the economy from the distorted structure of the central plan to the market based system. One working hypothesis that we develop later in the paper is that after the initial phases of transition these countries have moved towards the flow patterns observed in EU countries, with whom they share several policy and institutional factors.

4 Analysis of Variance

[7] We cannot compare the reported results directly with Micco and Pages (2004), since our analysis includes the size dimension in addition to the industry dimension. However, we also conducted the analysis excluding the size dimension (not reported here, but available upon request from the authors), and we find that the pairwise correlation of with U.S. gross job reallocation is highest for Mexico (0.91), followed by Brazil (0.84) and Great Britain (0.74). They find the correlation to be the highest with Canada, Great Britain and New Zealand, but the periods covered are different in our sample.

In the previous section, we have explored the different dimensions of the job flow data across countries, industries and size classes. The next logical step is to assess the relative importance of these different dimensions in explaining the overall variance in our dataset. Table 8 and Table 9 present the analysis of variance of job flows, for the unbalanced total economy and manufacturing samples, respectively. We consider the industry, size, country and industry*size effects, and, in addition, differentiate the analysis of variance by region.

It is noticeable that technological and market structure characteristics that are reflected in the industry-specific effect explain only 6.8 percent of variation in overall cross-country gross job reallocation (Table 8), although they account for a higher share in Latin America (23.3 percent). By contrast, differences in the size structure of firms explain as much as 40% of the total variation in cross-country gross job reallocation in all regions, and play an even more important role in transition countries at the beginning of 1990s. This fact is again in accordance with the characteristics of transition, as already mentioned in the previous section. Even country effects explain more of the variation in gross job reallocation than the industry effects, except in LAC, so even though there are similarities among countries within a region, there is still enough variation among them. Overall, the combined industry*size effects can explain the bulk of the variation in gross job reallocation: 55.6 percent overall, 55.8 percent in OECD countries, 73.3 percent in LAC and 72.3 percent in transition countries (66.9 percent, if we look only at the second half of the 1990s).

Gross job reallocation consists of job creation and job destruction, so we now turn to these two categories of job flows for further insight. We also further decompose them into the job creation by new firms and by incumbents and job destruction by exiting firms and by those that survive but downsize (we only report results for the job creation by new firms and job destruction by exiting firms, other results are available upon request from the authors). A number of interesting features emerge:

- *Industry effects* explain about 7 percent of variation in job creation and 6 percent of variation in job destruction, but there are significant differences among the three regions. Industry effects account for a much larger share of the overall variation (31 percent) in job creation in Latin America, slightly less than half of this in OECD countries, and only 7 percent in transition countries. In the early phases of transition, creation of jobs occurred across all industries, whereas they were more concentrated in certain industries in OECD and especially in Latin America: 15 percent of variation in job destruction in Latin America can be explained by industry effects, but only 9 percent in OECD countries.

- *Size effects.* Both in the case of job creation and job destruction, size effects alone account for a significant share of the total variation (30 and 41 percent, respectively). Looking at results by region reveals that size effects can account for 54 percent of variation in job creation in transition countries, but only 29 percent of variation in job destruction. In Latin America, the results are the opposite: the size effects can account for 63.0 percent of job destruction, but only for 21.4 percent of job creation.

- *The role of entry and exit of firms*. Size heterogeneity plays a particularly strong role in explaining the variation of job creation by new firms and the job destruction by exiting firms. Size heterogeneity is particularly important in Latin America where it accounts for 60 percent

of the heterogeneity in job creation by new firms and 70 percent of the job destruction by exiting firms. In the OECD countries, size heterogeneity plays a smaller role on both job creation and destruction by entering and exiting firms. In the transition economies there is a strong difference between job creation and destruction. The variation of job creation by entry is strongly influenced by size heterogeneity, while the importance of size effects in job destruction by exit is relatively smaller.

How to interpret these different sources of variability of job flows? Not surprisingly, in all regions size heterogeneity looms large among new firms depending on market conditions but also regulations that may affect the optimal size of entry. This seems particularly the case in Latin America in which sectors with many new micro entrants coexist with those where entry size is larger. But size heterogeneity also explains a significant fraction of the variance in job destruction by firm exit: some sectors see large failures of small young businesses while others see the decline of more mature activities of larger size. By contrast, in transition economies there is more variability in the size structure of new firms than among those that exit the market. A large number of new activities entered the market filling different niches of activities that were largely underdeveloped during the central planning, while job destruction involves firms of different sizes more evenly, with the closure of many large obsolete firms but also of many relatively newer and small ventures. It is also noticeable that in the transition economies country effects account for 20.3 percent of variation in job destruction by exiting firms, but only 6.5 percent of variation in job creation in by entering firms. This is suggestive of the different pace of enterprise restructuring and impact on firm closure and downsizing.[8]

To summarize, the analysis of variance of job flows suggest a significant role for the size composition – a factor that was not considered in previous studies – as well as differences across regions and within each of them. Technological and market structure characteristics (e.g. the industry effects) seem to play a relatively smaller role in explaining cross-country differences in job flows.

5 Empirical Analysis

The estimation model

In this section, we develop a formal test of the casual relationship between regulations in the labor market and job flows. We base our empirical analysis on two important results discussed in the previous sections: 1) a significant share of the total variance in job flows observed in the data is explained by industry-size effects; and 2) there is a high correlation in industry/size job flows across countries. These two results are consistent with the hypothesis that the frequency and possibly the magnitude of idiosyncratic demand shocks as well as technological progress may vary significantly across sectors and types of firms (small vs. large). These differences are similar across countries. In all countries, some sectors show a much larger dynamics of firms with the creation of many more jobs and the destruction of a similarly large amount. Moreover, in some sectors, continuing firms are involved in more frequent adjustments of factors, because of a more volatile goods market and/or because of a more rapid technological progress that imposes more frequent retooling of the production process.

[8] See Haltiwanger and Vodopivec (2003) and World Bank (2004).

The different intensity of idiosyncratic shocks and volatility of goods markets makes adjustment costs – and regulations affecting them – more binding in some industries compared to others.[9] In this section, we develop a formal test of the links between the regulatory environment in which firms operate and job turnover that exploits these observed sector/size variations through a difference-in-difference approach (see Rajan and Zingales (1998)).[10] The test is constructed as follows: we identify an industry's need for labor reallocation from the U.S. data. Under the assumption that regulations in the labor and goods markets in the U.S. are among the least restrictive in our sample, job reallocation in the U.S. should proxy for the technological and market-driven labor mobility in the absence of policy-induced adjustment costs. Under the additional assumption that this technological and market-driven demand for labor reallocation carries over to the other countries, we assess whether industries that require more labor mobility are disproportionally affected by regulations that raise adjustment costs. This would imply that, ceteris paribus, sectors with more volatile product market and more frequent adjustment of factors should be more strongly affected by regulations raising adjustment costs than those sectors with more stable product markets and less frequent technological changes. The advantage compared to standard cross-country/cross-sectoral empirical studies is that we exploit within-country differences between industry/sizes based on the interaction between country and industry/size characteristics. Thus, we can also control for country and industry/size effects, thereby minimizing problems of omitted variable bias and other miss-specifications.

To estimate our model we of course need an appropriate measure of the underlying market and technology-driven industry/size labor mobility. Since the United States are generally considered to be the country with the least restrictive regulations in the labor market and often in the goods market, we use the U.S. sector/size job flows as the benchmark of the required labor mobility.

Our different model specifications used in the empirical analysis can be summarized as follows:

i) baseline specification

1 $$Jflow_{c,i,s} = \beta_0 + \beta_1 \cdot USJflow_{i,s} + \sum_{c=1}^{C} \gamma_c D_c + \varepsilon_{c,i,s}$$

where D_c are country c ($c = 1 \ldots C$) dummies; $USJflow_{i,s}$ is the U.S. job flow variable in industry i and size class s ; and ε is the iid error term.

ii) cross- section analysis of regulation

2 $$Jflow_{c,i,s} = \beta_0 + \beta_1 \cdot USJflow_{i,s} + \beta_2 \cdot \mathrm{Re}\,gulation_c + \sum_{r=1}^{R} \delta_r D_r + \varepsilon_{c,i,s}$$

We have now added the regulatory variable that only varies across countries and thus requires removing the country dummies. To partially control for the omitted fixed effect, we can introduce

[9] Obviously, regulations and institutions themselves influence labor reallocation, but unless they play a differential role across sectors, they will affect the level of labor reallocation but not the ranking of reallocation across sector in a given country (Micco and Pages (2004)).

[10] The difference in difference approach has already been used in the corporate literature (e.g., Claessens and Laeven (2003)), in the analysis of firm dynamics (Klapper et al. (2004)) and in the analysis of job flows (Micco and Pages (2004)).

regional dummies ($D_r, r = 1 \ldots R$), although we have shown before that there is significant heterogeneity within each region.

iii) difference-in-difference with interaction:

$$\mathbf{3} \qquad Jflow_{c,i,s} = \beta_0 + \beta_1 \cdot USJflow_{i,s} + \beta_2 \cdot \left(USJflow_{i,s} \cdot \mathrm{Re}\, gulation_c\right) + \sum_{c=1}^{C} \gamma_c D_c + \varepsilon_{c,i,s}$$

Here we examine whether the difference in sector/size job flows between high and low volatility sector is lower in highly regulated countries compared to the U.S. benchmark. The inclusion of the regulatory variable only in interaction with the benchmark U.S. job flow indicator allows controlling for the unobserved country fixed effects.

The multivariate version of this specification in which we consider more than one regulatory variable together, can be written as follows:

$$\mathbf{4} \qquad Jflow_{c,i,s} = \beta_0 + \beta_1 \cdot USJflow_{i,s} + \sum_{k=1}^{K} \beta_{2,k} \left(USJflow_{i,s} \cdot \mathrm{Re}\, gulation_{c,k}\right) + \sum_{c=1}^{C} \gamma_c D_c + \varepsilon_{c,i,s}$$

The measure of job flows used in the empirical analysis is the sum of job creation and job destruction (SUM). In Appendix B, we also report the same specifications discussed above for an alternative measure of excess job reallocation, i.e. the difference between the sum and the (absolute value of) the net employment change. As shown in Appendix B, the results are largely unaffected by the use of this alternative measure of job flows.

All our variables are time averages over the available annual observations. The sample is un-balanced and covers fewer years for a number of countries (see Table 1). The time averages allow reducing the possible impact of business cycle fluctuations in the years for which we have the data and the possibility that such fluctuations were not synchronized (and thus could be captured by common time dummies). We also consider two sample periods: 1) 1989 to 2001; and 2) the same sample for OECD and Latin American countries and the sample from 1996 onwards for the transition economies. The choice of the second sub-sample for the transition economies is motivated by two interrelated factors. First and as discussed in the previous section, the initial years of the transition process (1991-1995) were characterized by un-precedent reallocation of labor – and other factors of production – across industries, firms and locations. The magnitude and direction of the observed flows were only temporary and, indeed, job flows declined towards the standard of OECD countries, and also became more balanced within each sector. Second, the early years of transition were characterized by major regulatory reforms to conform their institutional settings to those of market economies. For these two reasons, focusing on the second half of the 1990s for the transition economies is more appropriate in our comparative analysis of job flows.

Regulations in labor and product markets

Before moving into the analysis of the empirical results, we have to briefly discuss our regulatory indicators. We consider synthetic indicators of the stringency of regulations in the labor and product markets, as well as the degree of enforcement of laws and regulations. Our primary source for these is

the "Economic Freedom of the World (EFW)" database (see Gwartney and Lawson (2004)). They have been developed under the auspices of the Canadian Fraser Institute with the aid of a worldwide network of economists and research institutes. In particular, we use indicators referring to hiring and firing practices, regulation of business activities and integrity of the legal system.

Despite other indicators available in the literature for developing and emerging economies, (e.g., the World Bank *Doing Business* database) the EFW track changes in regulations over time and are thus more suitable for our analysis of job flows that have indeed been influenced by policy changes over the period covered by our data (see Table 10 for details on the regulatory variables).

The EFW indicator of the hiring and firing practices is measured on a scale from 0 to 10, with 10 being the worst (most restrictive). The average of the indicator is the strictest in transition countries (5.70), followed by OECD sample (5.43) and LAC (4.68). This synthetic indicator passes simple validation tests: for example, its correlation with similar indicator of employment protection legislation developed by the OECD is 0.85, statistically significant at the 1 percent level.[11]

In the sensitivity analysis, we also consider an EFW synthetic indicator of *regulations in the product market*. Regulations affecting the markets for goods and services have a strong impact on the degree of competition in the markets and the pace and effectiveness of reallocation of resources, including labor. Thus, more restrictive regulations that stifle market competition are also likely to influence job flows. The business regulation indicator is a simple average of five different indicators: price controls; administrative conditions and new business; time with government bureaucracy; starting a new business; and irregular payments. These five indicators are designed to identify the extent to which regulatory restraints and bureaucratic procedures limit competition and the operation of the goods and services markets. Business regulation (regulation of business activities from the Fraser Institute) is measured on a scale from 0 to 10, with 10 being the most restrictive. It is on average the strictest in LAC (4.21), followed by transition countries (3.32) and OECD (3.07). Appendix A contains more detailed definitions of the variables used in our analysis

The baseline specification

In our empirical investigation, we start with a baseline specification in which we only include the U.S. job flow benchmark and the country dummies. We then test for differences in the estimated coefficient of the U.S. job flow benchmark across the three regions for which we have data (OECD, Latin America and transition economies). Further, we allow the coefficient of the U.S. job flow variable to vary by firm size classes.

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[11] We check the robustness of our results by using an alternative measure of employment protection legislation, the OECD EPL index. Since this measure is not available for LAC and transition countries in the early 1990s, we augmented it in two ways. First, for transition countries we used data on EPL collected by Haltiwanger et al. (2003). Second, for LAC we imputed EPL by regressing a measure of hiring and firing practices from the Fraser Institute on EPL for transition and OECD countries and then using the estimated coefficient to calculate EPL. EPL is measured on a scale from 0 to 4, with 4 being the worst (most restrictive). It is on average the strictest in OECD (2.35) and the least strict in LAC (1.73)

Table 11 presents the results for these three alternative specifications and for the two samples discussed above (1989-2001 for all countries, and restricted to 1996-2001 for transition economies). As expected, the estimated coefficient of the U.S. job flow is highly significant, confirming the bivariate correlation analysis discussed above. However, the estimated coefficient is significantly less than one, suggesting that, other things being equal, the other countries in the sample have a lower variance in job flows across industry/size than the United States. If we then allow the coefficient on the U.S. job flow to vary by region (EU, Latin America and transition economies), we notice that there is a closer link between cross industry/size differences in gross job flows between the U.S. and the Latin American countries, than between the U.S. and the European countries. If we restrict the analysis to the 1996-2001 period for the transition economies, we see that their estimated coefficient for the benchmark U.S. job flows (column (5)) has declined to a level that is not statistically different from that of the EU countries at the conventional level. In other words, as the process of economic transformation progressed, the transition economies have seen the job reallocation slowing down and the cross-sectoral variance to converge towards the values observed in the EU countries.

The next step in our preliminary analysis is to differentiate the coefficient on the U.S. job flow by firm size. Perhaps not surprisingly, we notice that the coefficient is the highest for the smaller size class (1-19) and a monotonic decline for the larger size classes. In other words, the patterns of cross-industry job flows in the U.S. and other countries are more similar among small firms than among larger firms, possibly because small firms are exempted from certain regulations and/or can more easily avoid other regulations so have to show a degree of dynamism that is closed to that of the frictionless economy. For larger firms, regulations are more binding, especially in those industries that are inherently more volatile.

Regulations and job flows

The next step in our analysis is to look at the possible impact that labor regulations have on the observed job flows (Table 12). We focus on the restricted sample for the transition economies as discussed above. The first specification (column (1)) is a simple cross-country estimate in which we include the U.S. job flow benchmark and labor regulation indicator, but we do not interact the latter with the U.S. benchmark. These results are only preliminary, not least given the possible omitted variable bias due to the exclusion of country fixed effects. The estimated coefficient of the synthetic indicator of the stringency of hiring and firing regulations is negative and statistically significant at the 1% level. This result is largely unchanged if we also allow the U.S. job flow benchmark to vary across the three sub-regions (column (2)).

The next step is moving to the *difference-in-difference* analysis by focusing on the across industry/size variation of job flows within each country. Column (3) presents the basic model with the U.S. job flow benchmark and the interaction with the hiring and firing labor regulation variable, plus of course the country fixed effects (as in equation (**4**) above). After controlling for country and industry/size effects, we find that the interaction term is negatively signed but not statistically significant at the conventional level. This result holds even if we differentiate the effect of labor regulations by region.

As we know (see, e.g., Caballero et al. (2004), Heckman and Pages (2004)), the degree of enforcement of labor regulations – as well as other regulations – varies across our sample of countries that include the OECD, Latin American and transition economies. Not only are some firms and jobs not registered in Latin America and increasingly so in the transition economies and some Southern European countries, but also those registered may not fully comply with the existing rules and regulations. As an indication of the different degree of enforcement of laws and regulations, we consider the *law and order* indicator from the Fraser Institute (based on the Political Risk Component I (Law and Order) from the International Country Risk Guide, from 0 to 10, 10 being the worst).[12] The indicator shows the highest compliance with laws and regulations in the OECD sample of countries (average of 0.56), followed with the transition economies (average of 1.76) and by the Latin America countries (average of 4.96).

To control for the possibly different degree of enforcement of laws and regulations we adjust our regulatory variable as follows (X is the regulatory variable):

$$X_{c,adj} = \left(1 - \frac{Law\ \&\ Order}{10}\right) X_c \,. \qquad (5)$$

Columns (5) and (6) in Table 12 show the estimated effect of the interaction between the U.S. job flow and the labor regulation variable without and with differentiation by region. It is indeed noticeable that, once we control for the difference in the degree of enforcement, the interaction between hiring and firing regulations and U.S. job flows becomes strongly significant overall (column 5), and in each of the sub-regions (column (6)) when we allow the coefficient of the interaction to vary. In other words, controlling for enforcement we find that more intrinsically volatile industries and size classes present lower levels of gross job turnover, relatively to the less volatile industries, in countries with more stringent hiring and firing regulations. It is also interesting to notice that – once controlling for the enforcement of labor regulations – the estimated coefficient of the technology variable (the U.S. job flow benchmark) is closer to unity. Thus, a significant fraction of the more limited cross-sectoral variance in the magnitude of job flows in the countries of the sample compared with the United States is due to restrictive labor regulations that raise labor adjustment costs.

How sizeable is the estimated impact of labor regulation on job flows? Given our estimation approach, we consider the effect of labor regulations in reducing job reallocation between two industries at the extreme of the labor flexibility requirement. Using the coefficient on the interaction term in column (5) of Table 12, we estimate that the difference in job reallocation between the industries with a high flexibility requirement (90^{th} percentile of the flexibility distribution in the U.S.) and the industries with a low flexibility requirement (10^{th} percentile of the same distribution) will be 4.5 percentage points lower in the country with the highest index of hiring and firing regulations (the one at the top of distribution) compared to the U.S., i.e., the country with the least restrictive

[12] Micco and Pages (2004) also make an attempt at controlling for different degrees of enforcement of regulations by using an indicator of rules of laws and government effectiveness (see Kaufman (2003)). We used the Frazer index of *law and order* because it is available for the time period for which our job flows data are available for the different countries.

regulation. Considering that the average job reallocation rate is around 25% in the sample used in the regression, the estimated impact is indeed sizeable.[13]

The differential effects of regulations on small and large firms

The next step in our analysis is to look at the possibly different effect of labor regulations on job flows of firms of different sizes. Table 13 presents the job flow regressions in which we estimated the coefficient on the interaction between the benchmark U.S. job flow and the hiring and firing regulatory indicator for firms of different sizes. Column (1) considers the hiring and firing indicator without controlling for the different degree of enforcement of laws and regulations. Interestingly, once the interaction effect is allowed to vary across firm size classes, the estimated effect is negatively signed and statistically significant at the conventional level for all size classes. Moreover, the estimated impact of stringent regulations on the variance of job flows across industries increases with firm size. As hypothesized above, smaller firms are often either exempted by certain regulations or can more easily stay below the radar screen of regulators and law enforcement authorities. The estimated negative impact of labor regulations on job flows almost doubles in large firms (more than 100 employees) compared to the one among micro units (fewer than 20 employees).

Column (2) of Table 13 presents a similar specification in which we control for the different degree of enforcement of regulations. Controlling for such effects yields larger coefficients and a larger magnitude of the impact of labor regulations on job flows. As in the previous case, the estimated effect of labor regulations increases with the size of firms.[14]

Appropriate care and caution is required to interpret the interaction effects estimated in Table 3 with respect to employer size. Recall that small businesses systematically have higher job reallocation rates than larger businesses in all countries including the U.S. benchmark. As such, the results in Table 12 imply that industry/size cells with a higher U.S. benchmark will have the flow reduced by labor market regulations that are enforced. For Table 13, this implies that in comparing coefficients across size class interactions, the magnitudes are comparable for a *given* U.S. benchmark rate. That is, large businesses have a larger absolute effect than small businesses for a given U.S. benchmark rate. But given that small businesses have a higher U.S. benchmark rate this variation tends to work in the opposite direction.

The final step in our analysis is aimed at assessing the robustness of our results to the inclusion of regulations in the goods and services markets in our specification. As discussed above, regulations in different markets tend to be highly correlated, i.e. countries that impose strict rules of hiring and firing also tend to impose more restrictive regulations on the goods and services markets. There are also specific aspects of product market regulations that can influence job flows over and above labor

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[13] The estimated value is obtained as follows: $\beta\left[\left(USJflow_{90th} - USJFlow_{10th}\right)\left(HF_{\max} - HF_{\min}\right)\right]$, where β is the estimated coefficient, and $USFJflow$ and HF are the job reallocation in the U.S. and the indicator of hiring and firing regulations corrected for the degree of enforcement. Micco and Pages (2004) using a similar approach estimated an impact of 5.7 percentage point. Their country sample and period of observation was different from ours but the results are noticeably close.

[14] Also in this case, the results are robust to the use of the excess labor reallocation. See Appendix B for more details.

regulations. For example, since a significant fraction of the overall job flows is due to the entry and exit of firms, regulations affecting the start up of a new business, as well as bankruptcy rules that affect the exit of low performing units, may affect job flows. Likewise, regulations affecting price setting by firms, their relations with the public administration and with their clients can all influence incentives for firms to expand, adopt new technologies and ultimately their desire and need to adjust the workforce.

Columns (3) and (4) of Table 13 show the results of estimating the job flow regressions once we control for our synthetic indicator of business regulations. We correct both labor and product market regulations by the degree of enforcement proxied by the law and order indicator. In column (3), we do not differentiate the interaction between U.S. reallocation and regulations (both labor and product market) by firm size, while we do so in the last column of the table. Including the interaction between product market regulations and U.S. job flows does not dramatically alter our results. Whether we differentiate the impact of both regulations by firm size or not, the estimated effects of the interaction between U.S. job reallocation and labor regulations remain negatively signed and highly statistically significant, while the coefficients on the product market regulations are generally not statistically significant. However, once we differentiate the effects by firm size, we notice that the only statistically significant effect of product market regulations is among large businesses (greater than 100 employees). Moreover, controlling for product market regulations reduces the estimated impact of labor regulations for those firms. In other words, for large firms product market regulations play an important role in curbing labor reallocation over and above labor regulations. Intermediate firms (those in between 20 and 99 employees) seem to be the most adversely affected by stringent labor regulations that raise labor adjustment costs.

These results confirm the importance of labor regulations in shaping labor adjustment patterns, particularly so in those industries and size classes where technological and market factors require more frequent employment changes. However, controlling for other regulations influencing firm behavior also influences job flows.

Sensitivity Analysis

In the empirical analysis, we have controlled for country, sector and size effects, as well as for unobservable effects using a difference-in-difference approach. Moreover, we have tested the robustness of results of the institutional variable of interest – the hiring and firing regulations – by including other regulatory aspects. However, the use of quasi panel data may still run the risk that results are driven by the inclusion of a specific country or industry in the sample that drives the results in a given direction. The use of un-balanced panel on the industry dimension makes this risk potentially more serious.

To test for the robustness of results to changes in the sample, we re-estimate our two preferred specifications – columns (2) and (4) in Table 13 – removing one country or one industry at the time from the sample. We present the estimated coefficients for the enforcement-adjusted hiring and firing regulations interacted with job reallocation in the U.S. differentiated by size classes in the specification without and with the interaction with business regulations (Figure 3 and Figure 4, respectively).

The results show a remarkable stability of the estimated coefficient for the interaction term to the changes in the sample along the country or the industry dimension. The point coefficient estimates for the interaction term are always negatively signed and statistically significant at conventional levels in all the truncated samples. The most sensible coefficients are those for the largest size class – 100 and more employees – where the exclusion of Portugal or Chile leads to a stronger estimated effect of regulations. Not surprisingly given the un-balanced nature of the sample, the exclusion of finance and business activities as well as construction tend to strengthen the estimated negative effects of regulations on job reallocation.

6 Concluding remarks

This paper exploits a rich new database with harmonized data on job flows that vary by country, industry and size class. We find that all countries in our sample exhibit sizeable annual gross job flows. Industry and size class effects, together, account for a very large share of the overall variability in job flows across country, industry and size class cells (e.g., over 50 percent of the variation in the summary measure of job reallocation is accounted for by industry and size effects interacted together). Interestingly, the most important factor here is employer size. Small businesses exhibit a substantially higher pace of job creation and destruction and this pattern is pervasive across industries and countries. Moreover, industry effects play a large role as well. Taken together, it is clear that some form of technology, cost and demand factors that are common across countries that account for the bulk of the variation in job flows. Nevertheless, even after controlling for industry/technology and size factors, there remain significant differences in job flows across countries that could reflect differences in business environment conditions.

Our harmonized firm-level dataset for a sample of 16 industrial and emerging economies over the past decade allows us to look at one of the factors shaping the business environment – the regulations on hiring and firing of workers. To minimize the possible endogeneity and omitted variable problems associated with cross-country regressions, we use a difference-in-difference approach. The empirical results suggest that stringent hiring and firing regulations (and their consistent enforcement) reduce job turnover, especially in industry and size class cells that inherently exhibit more job turnover. To capture the latter, we use the U.S. patterns as a benchmark to identify and quantify the industry/size class cells with inherently higher job turnover. Regulations also distort the patterns of flows across industry and size classes within a country. Interestingly, even though medium and small firms have lower average flows, holding the magnitude of the U.S. benchmark rates constant, medium and large firms are more severely affected by stringent labor regulations within a country. Small firms are less affected (for a given pace of reallocation in the U.S. benchmark), probably because they are partially exempted by such regulations or can more easily circumvent them.

Much work remains to be done to understand the implications of our findings. Our findings provide evidence that stringent labor regulations have impact on the reallocation dynamics. It is much larger step to demonstrate that stringent labor regulations have an adverse impact on the efficient allocation of labor in a manner consistent with the predictions of Hopenhayn and Rogerson (1992). To explore the latter, we need to measure not only reallocation but productivity at the micro level. A number of

studies have found that allocative efficiency is important for understanding differences across time, industries and countries in the level and growth of productivity (see, e.g., Foster et. al. (2001) and Bartelsman et. al. (2005)). Putting those findings together with those in this paper certainly suggests stringent labor market regulations may have an important adverse impact on allocative efficiency and in turn productivity levels and growth. However, much work (including additional data infrastructure development) is needed to bring all of the pieces together to explore these important issues.

Figure 1 Decomposition of Job Creation and Destruction by Continuing, Entering and Exiting Firms, 1990s, Total Economy and Manufacturing

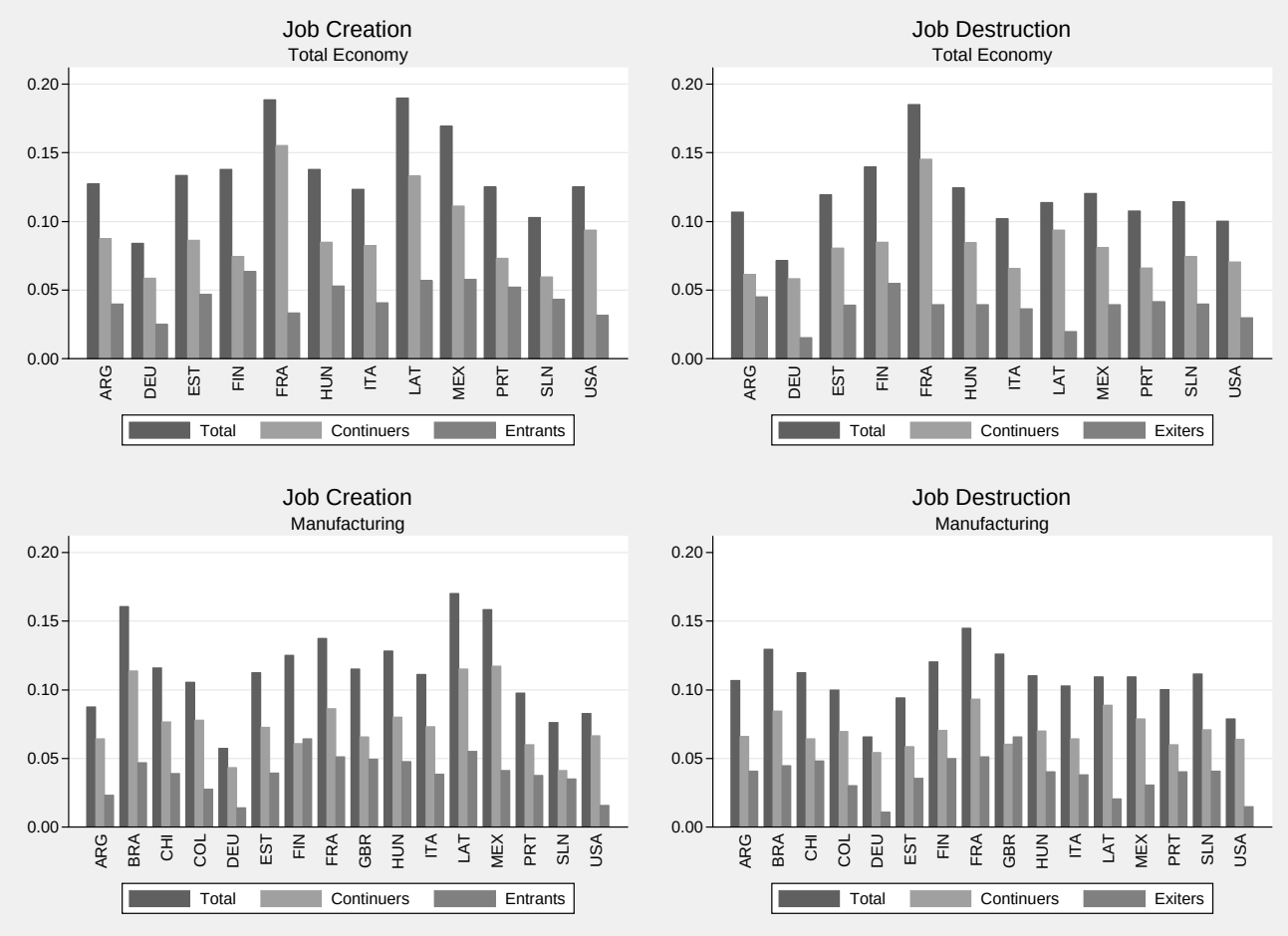


Figure 2 **Decomposition of Job Reallocation across Firms of Different Sizes, Total Economy**

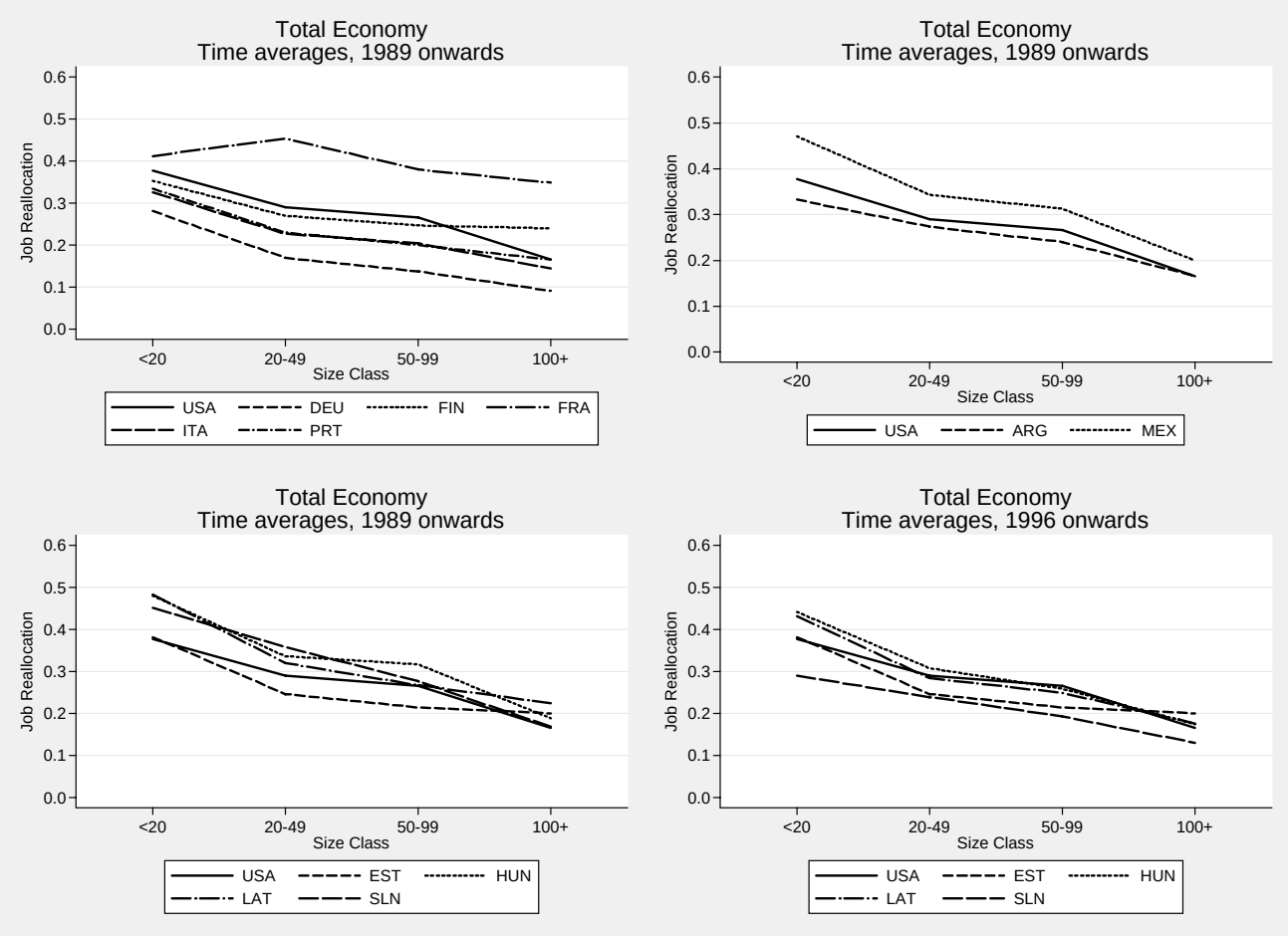
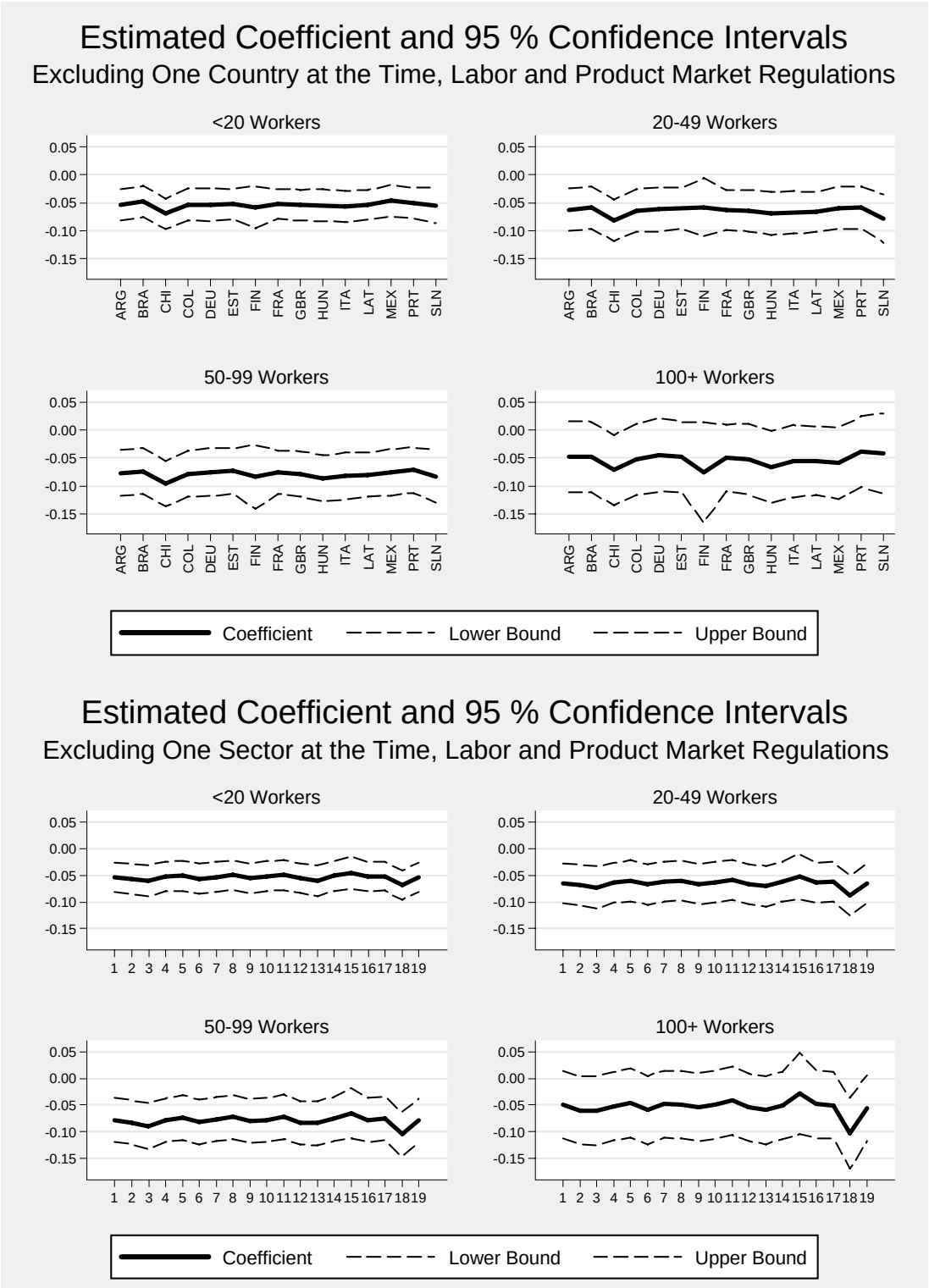


Figure 3 Sensitivity Analysis, column (2) from Table 13

1 agriculture, 2 food & bev., 3 textiles, 4 wood, 5 paper, 6 chem & fuel, 7 rubber & plastics, 8 other non-metal, 9 basic metals, 10 fabr. metal ex mach, 11 mach n.e.c., 12 electrical & optical, 13 transport equip, 14 recycling, 15 construction, 16 trade & restaurant, 17 trans & comm., 18 fin ins & bus serv, 19 social & pers serv.

Figure 4 Sensitivity Analysis, column (4) from Table 13



1 agriculture, 2 food & bev., 3 textiles, 4 wood, 5 paper, 6 chem & fuel, 7 rubber & plastics, 8 other non-metal, 9 basic metals, 10 fabr. metal ex mach, 11 mach n.e.c., 12 electrical & optical, 13 transport equip, 14 recycling, 15 construction, 16 trade & restaurant, 17 trans & comm., 18 fin ins & bus serv, 19 social & pers serv.

Tables

Table 1 Data sources used for firm demographics and job flows

Country	Source	Period	Max. sectoral coverage (number of sectors)	Threshold
		OECD		
Finland	Business register	1988-1998	All (17)	Emp ≥ 1
France	Fiscal database	1989-1997	All (17)	Turnover: Man: Euro 0.58m Serv: Euro 0.17m
Germany (West)	Social security	1977-1999	All but civil service, self employed (11)	Emp ≥ 1
Italy	Social security	1986-1994	All (19)	Emp ≥ 1
Portugal	Employment-based register	1983-1998	All but public Administration (19)	Emp ≥ 1
UK	Business register	1980-1998	Manufacturing (10)	Emp ≥ 1
USA	Business register	1988-1997	Private businesses (19)	Emp ≥ 1
		LAC		
Argentina	Register, based on Integrated System of Pensions	1995-2002	All ,(19)	Emp ≥ 1
Brazil	Census	1996-2001	Manufacturing (13)	Emp ≥ 1
Chile	Annual Industry Survey (ENIA)	1979-1999	Manufacturing (13)	Emp. ≥ 10
Colombia	Annual Manufacturing survey (EAM)	1982-1998	Manufacturing (13)	Emp. ≥ 10
		TRANSITION		
Estonia	Business Register	1995-2001	All (19)	Emp ≥ 1
Hungary	Fiscal register (APEH)	1992-2001	All (19)	Emp ≥ 1
Latvia	Business register	1996-2002	All (18)	Emp ≥ 1
Mexico	Social security	1985-2001	All (17)	Emp ≥ 1
Romania	Business register	1992-2001	All (19)	Emp ≥ 1
Slovenia	Business register	1992-2001	All (19)	Emp ≥ 1

Table 2 Average Job Flows in the 1990s, Overall and by Region, Total Economy

OVERALL					
Variable	Obs	Mean	Std. Dev.	Min	Max
Job Creation Rate	1048	0.147	0.067	0.000	0.647
Job Destruction Rate	1048	0.131	0.062	0.000	0.419
Net Employment Growth	1048	0.015	0.065	-0.299	0.419
Job Reallocation Rate	1048	0.278	0.112	0.000	0.875
Excess Job Reallocation Rate	1048	0.231	0.098	0.000	0.732
Job Creation Rate (Entry)	1048	0.055	0.043	0.000	0.357
Job Destruction Rate (Exit)	1048	0.046	0.029	0.000	0.216
OECD					
Job Creation Rate	448	0.127	0.046	0.033	0.288
Job Destruction Rate	448	0.127	0.060	0.029	0.411
Net Employment Growth	448	0.000	0.046	-0.282	0.148
Job Reallocation Rate	448	0.254	0.096	0.072	0.570
Excess Job Reallocation Rate	448	0.223	0.085	0.058	0.472
Job Creation Rate (Entry)	448	0.045	0.030	0.003	0.195
Job Destruction Rate (Exit)	448	0.045	0.028	0.000	0.216
LAC					
Job Creation Rate	300	0.148	0.061	0.033	0.431
Job Destruction Rate	300	0.140	0.066	0.041	0.419
Net Employment Growth	300	0.008	0.053	-0.214	0.286
Job Reallocation Rate	300	0.288	0.114	0.086	0.785
Excess Job Reallocation Rate	300	0.248	0.103	0.066	0.732
Job Creation Rate (Entry)	300	0.056	0.040	0.000	0.227
Job Destruction Rate (Exit)	300	0.053	0.032	0.003	0.152
TRANSITION					
Job Creation Rate	300	0.174	0.088	0.000	0.647
Job Destruction Rate	300	0.128	0.061	0.000	0.385
Net Employment Growth	300	0.046	0.087	-0.299	0.419
Job Reallocation Rate	300	0.303	0.123	0.000	0.875
Excess Job Reallocation Rate	300	0.227	0.109	0.000	0.608
Job Creation Rate (Entry)	300	0.070	0.056	0.000	0.357
Job Destruction Rate (Exit)	300	0.039	0.025	0.000	0.135

Table 3 Percentage of Job Flows in a Certain Size Class, Total Economy, 1990s

	Gross Job Reallocation				Job Creation				Job Destruction			
Country	*<20*	*20-49*	*50-99*	*100+*	*<20*	*20-49*	*50-99*	*100+*	*<20*	*20-49*	*50-99*	*100+*
Germany	0.467	0.140	0.093	0.300	0.440	0.149	0.102	0.309	0.510	0.129	0.082	0.278
Finland	0.394	0.103	0.067	0.436	0.419	0.088	0.055	0.438	0.369	0.120	0.080	0.431
France	0.173	0.133	0.110	0.584	0.130	0.085	0.103	0.682	0.220	0.185	0.119	0.477
Italy	0.522	0.130	0.073	0.276	0.492	0.142	0.085	0.280	0.568	0.116	0.059	0.256
Portugal	0.457	0.153	0.097	0.292	0.471	0.152	0.094	0.283	0.449	0.152	0.099	0.300
USA	0.315	0.131	0.087	0.467	0.279	0.132	0.089	0.499	0.361	0.130	0.085	0.423
Argentina	0.397	0.154	0.106	0.342	0.367	0.158	0.112	0.362	0.433	0.147	0.097	0.322
Mexico	0.377	0.137	0.099	0.386	0.319	0.137	0.103	0.442	0.462	0.138	0.094	0.307
Estonia (1990s)	0.365	0.172	0.125	0.337	0.414	0.167	0.114	0.306	0.318	0.180	0.139	0.363
Hungary (1990s)	0.273	0.134	0.118	0.475	0.296	0.144	0.107	0.453	0.251	0.125	0.127	0.497
Latvia (1990s)	0.383	0.141	0.104	0.371	0.390	0.137	0.101	0.372	0.376	0.150	0.112	0.363
Slovenia (1990s)	0.227	0.088	0.100	0.585	0.293	0.100	0.090	0.517	0.169	0.076	0.112	0.643
Estonia (late 1990s)	0.365	0.172	0.125	0.337	0.414	0.167	0.114	0.306	0.318	0.180	0.139	0.363
Hungary (late 1990s)	0.317	0.142	0.108	0.433	0.337	0.149	0.106	0.408	0.294	0.132	0.111	0.463
Latvia (late 1990s)	0.421	0.143	0.107	0.328	0.437	0.139	0.107	0.317	0.398	0.150	0.109	0.343
Slovenia (late 1990s)	0.287	0.104	0.099	0.510	0.328	0.121	0.084	0.467	0.244	0.085	0.116	0.555

We do not observe firms with sales below a given threshold in France.

Table 4 Percentage of Job Flows in a Certain Size Class, Manufacturing, 1990s

	Gross Job Reallocation				Job Creation				Job Destruction			
Country	*<20*	*20-49*	*50-99*	*100+*	*<20*	*20-49*	*50-99*	*100+*	*<20*	*20-49*	*50-99*	*100+*
Germany	0.344	0.136	0.098	0.422	0.307	0.141	0.110	0.442	0.399	0.135	0.088	0.378
Finland	0.199	0.093	0.073	0.635	0.205	0.088	0.065	0.642	0.201	0.099	0.083	0.618
France	0.258	0.156	0.109	0.477	0.227	0.139	0.105	0.530	0.286	0.175	0.113	0.426
Great Britain	0.198	0.116	0.102	0.583	0.209	0.116	0.103	0.572	0.183	0.113	0.101	0.604
Italy	0.427	0.142	0.078	0.353	0.421	0.154	0.082	0.343	0.445	0.133	0.074	0.348
Portugal	0.306	0.193	0.137	0.364	0.335	0.197	0.132	0.337	0.289	0.186	0.138	0.386
USA	0.161	0.116	0.096	0.626	0.146	0.119	0.099	0.635	0.180	0.114	0.094	0.612
Argentina	0.331	0.164	0.115	0.389	0.318	0.174	0.123	0.385	0.346	0.155	0.108	0.392
Brazil	0.288	0.145	0.100	0.466	0.290	0.162	0.105	0.443	0.297	0.127	0.092	0.484
Chile	0.069	0.163	0.158	0.610	0.051	0.154	0.154	0.640	0.091	0.174	0.163	0.572
Colombia	0.126	0.172	0.163	0.538	0.095	0.160	0.161	0.585	0.162	0.186	0.165	0.487
Mexico	0.258	0.124	0.103	0.515	0.201	0.115	0.100	0.584	0.343	0.137	0.106	0.414
Estonia (1990s)	0.227	0.172	0.142	0.459	0.246	0.180	0.146	0.429	0.206	0.164	0.137	0.493
Hungary (1990s)	0.159	0.121	0.111	0.609	0.165	0.135	0.117	0.583	0.154	0.107	0.106	0.633
Latvia (1990s)	0.431	0.155	0.110	0.305	0.451	0.157	0.120	0.272	0.400	0.154	0.092	0.354
Slovenia (1990s)	0.100	0.072	0.100	0.728	0.146	0.091	0.102	0.661	0.069	0.058	0.102	0.771
Estonia (late 1990s)	0.227	0.172	0.142	0.459	0.246	0.180	0.146	0.429	0.206	0.164	0.137	0.493
Hungary (late 1990s)	0.172	0.128	0.109	0.591	0.177	0.136	0.111	0.576	0.169	0.119	0.108	0.604
Latvia (late 1990s)	0.453	0.146	0.107	0.293	0.467	0.147	0.120	0.265	0.434	0.146	0.085	0.336
Slovenia (late 1990s)	0.128	0.082	0.108	0.682	0.173	0.112	0.106	0.609	0.099	0.062	0.110	0.729

We do not observe firms with less than 10 workers in Chile and Colombia, and firms with sales below a given threshold are excluded from the sample in France.

Table 5 Cross-Industry Variation in Job Flows

	HIGH - WOOD			LOW - TRANSPORT EQUIPMENT			TRADE AND RESTAURANT		
Country	*Gross Job Reallocation*	*Continuing Firms*	*Entering and Exiting Firms*	*Gross Job Reallocation*	*Continuing Firms*	*Entering and Exiting Firms*	*Gross Job Reallocation*	*Continuing Firms*	*Entering and Exiting Firms*
Germany	0.130	0.105	0.027	0.083	0.071	0.012			
Finland	0.252	0.156	0.096	0.249	0.135	0.113	0.264	0.158	0.106
France	0.248	0.146	0.102	0.238	0.174	0.064	0.388	0.305	0.083
Great Britain	0.289	0.132	0.154	0.199	0.109	0.089			
Italy	0.215	0.141	0.074	0.125	0.091	0.034	0.259	0.161	0.098
Portugal	0.226	0.121	0.105	0.197	0.135	0.061	0.260	0.146	0.114
USA	**0.260**	**0.185**	**0.074**	**0.119**	**0.108**	**0.010**	**0.256**	**0.176**	**0.080**
Argentina	0.224	0.134	0.090	0.197	0.156	0.041	0.271	0.151	0.121
Brazil	0.370	0.236	0.134	0.228	0.162	0.066			
Chile	0.287	0.151	0.136	0.272	0.163	0.109			
Colombia	0.223	0.133	0.090	0.187	0.135	0.052			
Mexico	0.346	0.228	0.118	0.234	0.200	0.033	0.311	0.182	0.129
Estonia (1990s)	0.242	0.140	0.102	0.166	0.117	0.050	0.295	0.194	0.101
Hungary (1990s)	0.290	0.176	0.114	0.244	0.186	0.058	0.375	0.238	0.137
Latvia (1990s)	0.292	0.219	0.074	0.330	0.243	0.087	0.298	0.222	0.076
Slovenia (1990s)	0.191	0.119	0.072	0.252	0.118	0.133	0.263	0.161	0.103
Estonia (late 1990s)	0.242	0.140	0.102	0.166	0.117	0.050	0.295	0.194	0.101
Hungary (late 1990s)	0.262	0.159	0.102	0.259	0.193	0.065	0.338	0.211	0.127
Latvia (late 1990s)	0.266	0.192	0.074	0.348	0.280	0.068	0.277	0.208	0.070
Slovenia (late 1990s)	0.165	0.109	0.056	0.194	0.107	0.087	0.222	0.146	0.076

Table 6 Pairwise Correlations with the USA Job Flows, Total Economy (unbalanced)

	Gross Job Reallocation	Excess Job Reallocation	Job Creation by Entering Firms	Job Destruction by Exiting Firms
OECD	**0.7057**	**0.6577**	**0.5851**	**0.6900**
Germany	0.8183	0.8074	0.7815	0.8525
Finland	0.6852	0.6025	0.0509	0.4277
France	0.4745	0.3531	0.5845	0.7815
Great Britain	0.8471	0.8247	0.7129	0.7737
Italy	0.5954	0.5782	0.5504	0.7031
Portugal	0.8134	0.7804	0.8301	0.6012
LAC	**0.8290**	**0.7773**	**0.7848**	**0.8024**
Argentina	0.7670	0.7214	0.7851	0.7527
Brazil	0.9048	0.8383	0.9035	0.7768
Chile	0.7264	0.5556	0.6013	0.7632
Colombia	0.9121	0.8835	0.8780	0.8534
Mexico	0.8345	0.8878	0.7562	0.8660
TRANSITION, 1990s	**0.7057**	**0.6961**	**0.6230**	**0.4413**
Estonia (1990s)	0.6036	0.6554	0.4761	0.1641
Hungary (1990s)	0.8168	0.8157	0.8174	0.6911
Latvia (1990s)	0.6616	0.6962	0.5919	0.5960
Slovenia (1990s)	0.7406	0.6172	0.6065	0.3140
Late 1990s	**0.6771**	**0.6981**	**0.5859**	**0.4500**
Estonia (late 1990s)	0.6036	0.6554	0.4761	0.1641
Hungary (late 1990s)	0.7911	0.7970	0.8070	0.6622
Latvia (late 1990s)	0.5919	0.6644	0.5886	0.6108
Slovenia (late 1990s)	0.7216	0.6755	0.4718	0.3629

Table 7 Rank Correlations with the USA Job Flows, Total Economy (unbalanced)

	Gross Job Reallocation	Excess Job Reallocation	Job Creation by Entering Firms	Job Destruction by Exiting Firms
OECD	**0.7007**	**0.6330**	**0.5445**	**0.7030**
Germany	0.8186	0.8154	0.7950	0.8789
Finland	0.6450	0.5269	-0.0089	0.5028
France	0.5083	0.3688	0.5654	0.7423
Great Britain	0.8672	0.7937	0.6713	0.8168
Italy	0.5880	0.5515	0.5443	0.5999
Portugal	0.7770	0.7418	0.6996	0.6773
LAC	**0.8371**	**0.7908**	**0.8035**	**0.8121**
Argentina	0.8611	0.8255	0.7897	0.7774
Brazil	0.8868	0.7913	0.8956	0.7828
Chile	0.6743	0.5619	0.6358	0.7608
Colombia	0.8996	0.8812	0.8624	0.8586
Mexico	0.8636	0.8940	0.8342	0.8810
TRANSITION, 1990s	**0.7174**	**0.6978**	**0.6240**	**0.4702**
Estonia (1990s)	0.6785	0.6186	0.5161	0.2981
Hungary (1990s)	0.8200	0.8108	0.7676	0.7223
Latvia (1990s)	0.6304	0.7137	0.5481	0.5560
Slovenia (1990s)	0.7407	0.6479	0.6640	0.3045
Late 1990s	**0.6925**	**0.6874**	**0.5832**	**0.4807**
Estonia (late 1990s)	0.6785	0.6186	0.5161	0.2981
Hungary (late 1990s)	0.7925	0.7711	0.7529	0.6955
Latvia (late 1990s)	0.5854	0.6671	0.5945	0.5792
Slovenia (late 1990s)	0.7136	0.6927	0.4691	0.3498

Table 8 Analysis of Variance, Total Economy (Unbalanced panel)

	Job Creation	*Job Destruction*	*Net Employment Growth*	*Gross Job Reallocation*	*Excess Job Reallocation*	*Job Creation - Entry*	*Job Destruction - Exit*
INDUSTRY EFFECTS							
All	0.0670	0.0613	0.0554	0.0675	0.0538	0.0164	0.0500
OECD	0.1492	0.0892	0.1164	0.1104	0.0509	0.0229	0.0706
LAC	0.3076	0.1438	0.1568	0.2327	0.1655	0.1159	0.1049
Transition (1990s)	0.0644	0.0931	0.1525	0.0341	0.0877	0.0486	0.0938
Transition (late 1990s)	0.0731	0.0665	0.1350	0.0344	0.0790	0.0399	0.0827
SIZE EFFECTS							
All	0.3003	0.4100	0.0021	0.4706	0.4591	0.4325	0.3373
OECD	0.3027	0.3738	0.0605	0.4139	0.4468	0.4439	0.3127
LAC	0.2142	0.6300	0.2557	0.4777	0.5093	0.5950	0.7000
Transition (1990s)	0.5400	0.2861	0.1443	0.6149	0.4706	0.4858	0.1236
Transition (late 1990s)	0.4309	0.2488	0.0708	0.5268	0.4945	0.4412	0.1441
COUNTRY EFFECTS							
All	0.2138	0.1252	0.1975	0.1648	0.1435	0.1453	0.1996
OECD	0.1576	0.2009	0.1113	0.2019	0.1885	0.1253	0.2829
LAC	0.3041	0.0419	0.1808	0.1588	0.1276	0.1133	0.0255
Transition (1990s)	0.0570	0.0867	0.0974	0.0512	0.0865	0.0653	0.2031
Transition (late 1990s)	0.0997	0.0445	0.0681	0.0851	0.0933	0.0645	0.1719
INDUSTRY*SIZE EFFECTS							
All	0.3861	0.4964	0.0904	0.5558	0.5263	0.4624	0.4097
OECD	0.4888	0.5041	0.2421	0.5579	0.5215	0.5018	0.4053
LAC	0.5574	0.8079	0.5062	0.7326	0.6998	0.7364	0.8478
Transition (1990s)	0.6856	0.4685	0.3998	0.7233	0.6186	0.5956	0.3004
Transition (late 1990s)	0.5978	0.4736	0.3417	0.6692	0.6493	0.5676	0.3189

Table 9 Analysis of Variance, Manufacturing

	Job Creation	*Job Destruction*	*Net Employment Growth*	*Gross Job Reallocation*	*Excess Job Reallocation*	*Job Creation - Entry*	*Job Destruction - Exit*
INDUSTRY EFFECTS							
All	0.0126	0.0432	0.0431	0.0207	0.0129	0.0093	0.0484
OECD	0.0377	0.0681	0.1729	0.0358	0.0136	0.0135	0.0691
LAC	0.0397	0.0429	0.0626	0.0371	0.0172	0.0196	0.0464
Transition (1990s)	0.0344	0.0720	0.0902	0.0257	0.0577	0.0402	0.0655
Transition (late 1990s)	0.0387	0.0469	0.0695	0.0251	0.0529	0.0244	0.0666
SIZE EFFECTS							
All	0.3307	0.4572	0.0046	0.5231	0.4903	0.4120	0.3555
OECD	0.4202	0.4786	0.0727	0.5254	0.5053	0.4083	0.3252
LAC	0.3112	0.6997	0.2919	0.5946	0.5737	0.6780	0.7441
Transition (1990s)	0.5315	0.2608	0.1302	0.5940	0.4678	0.4327	0.1031
Transition (late 1990s)	0.4188	0.2257	0.0660	0.5116	0.5086	0.3937	0.1217
COUNTRY EFFECTS							
All	0.2627	0.1217	0.2310	0.1868	0.1783	0.1620	0.2351
OECD	0.1937	0.1710	0.0757	0.1981	0.2164	0.1680	0.3753
LAC	0.4540	0.0538	0.2244	0.2157	0.1874	0.1446	0.0388
Transition (1990s)	0.0458	0.1033	0.0947	0.0508	0.1062	0.0589	0.2157
Transition (late 1990s)	0.1113	0.0449	0.0999	0.0761	0.1112	0.0608	0.1919
INDUSTRY*SIZE EFFECTS							
All	0.3649	0.5265	0.0811	0.5641	0.5171	0.4371	0.4274
OECD	0.4862	0.5894	0.3134	0.5930	0.5408	0.4505	0.4171
LAC	0.3724	0.7695	0.4003	0.6519	0.6081	0.7143	0.8235
Transition (1990s)	0.6548	0.4303	0.3295	0.7029	0.5831	0.5407	0.2536
Transition (late 1990s)	0.5563	0.4489	0.2741	0.6605	0.6390	0.5214	0.2797

Table 10 Institutional Variables

OVERALL				
Variable	Mean	Std. Dev.	Min	Max
Hiring and Firing Practices (Fraser)	5.261	1.515	2.878	7.700
Law&Order adjusted Hiring and Firing Practices (Fraser)	4.113	2.019	0.000	7.209
Business Regulations (Fraser)	3.490	1.389	1.100	5.900
Law&Order adjusted Business Regulations (Fraser)	2.490	1.233	0.000	4.600
Law and Order (Fraser)	2.280	2.818	0.000	10.000
EU & USA				
Hiring and Firing Practices (Fraser)	5.427	1.804	2.878	7.400
Law&Order adjusted Hiring and Firing Practices (Fraser)	5.084	1.559	2.878	6.600
Business Regulations (Fraser)	3.074	1.682	1.100	5.600
Law&Order adjusted Business Regulations (Fraser)	2.822	1.349	1.100	4.600
Law and Order (Fraser)	0.469	1.121	0.000	3.000
LAC				
Hiring and Firing Practices (Fraser)	4.679	0.943	3.230	5.740
Law&Order adjusted Hiring and Firing Practices (Fraser)	2.249	1.642	0.000	4.431
Business Regulations (Fraser)	4.206	1.297	2.617	5.900
Law&Order adjusted Business Regulations (Fraser)	1.811	1.321	0.000	3.320
Law and Order (Fraser)	4.949	2.769	2.280	10.000
TRANSITION, B2				
Hiring and Firing Practices (Fraser)	5.696	1.705	3.586	7.700
Law&Order adjusted Hiring and Firing Practices (Fraser)	4.742	1.846	3.079	7.209
Business Regulations (Fraser)	3.323	0.669	2.650	4.200
Law&Order adjusted Business Regulations (Fraser)	2.757	0.716	1.776	3.486
Law and Order (Fraser)	1.763	1.119	0.637	3.300

Table 11 Job flows – A baseline difference in difference analysis

	1990s			**1990s, transition late 1990s**		
	(1)	(2)	(3)	(4)	(5)	(6)
Constant	-0.0348***	0.0004	0.0524***	0.1153***	0.1376***	0.1810***
	[0.0100]	[0.0118]	[0.0118]	[0.0095]	[0.0109]	[0.0107]
USA SUM	0.7097***			0.6621***		
	[0.0183]			[0.0173]		
USA SUM * EU		0.5860***			0.5746***	
		[0.0288]			[0.0274]	
USA SUM * Transition		0.8282***			0.6878***	
		[0.0325]			[0.0308]	
USA SUM * LAC		0.7493***			0.7493***	
		[0.0329]			[0.0312]	
USA SUM * <20 Workers			0.5628***			0.5385***
			[0.0227]			[0.0215]
USA SUM * 20-49 Workers			0.3975***			0.3875***
			[0.0317]			[0.0301]
USA SUM * 50-99 Workers			0.3157***			0.3169***
			[0.0351]			[0.0333]
USA SUM * 100+ Workers			0.1764***			0.2090***
			[0.0566]			[0.0537]
Observations	935	935	935	940	940	940
Adjusted R-squared	0.69	0.70	0.74	0.69	0.69	0.73

Standard errors in brackets. * significant at 10%, ** significant at 5%, *** significant at 1%. All regressions include country dummies. USA SUM: sector/size job reallocation in the U.S.; *EU* denotes the OECD European countries; *Transition* denotes the countries in Central and Eastern Europe; LAC denotes the countries in Latin America.

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Table 12 Job flows and the role of labor regulations

(difference-in-difference analysis)

	(1)	(2)	(3)	(4)	(5)	(6)
Constant	0.1815***	0.2062***	0.0930***	0.0360***	0.0016	0.0513***
	[0.0341]	[0.0354]	[0.0290]	[0.0138]	[0.0100]	[0.0140]
USA SUM	0.6588***		0.8417***	0.7047***	0.8602***	0.8541***
	[0.0426]		[0.2010]	[0.0835]	[0.1016]	[0.0490]
USA SUM * EU		0.5660***				
		[0.0390]				
USA SUM * Transition		0.6876***				
		[0.0466]				
USA SUM * LAC		0.7501***				
		[0.1050]				
EPL	-0.0191***	-0.0190***				
	[0.0042]	[0.0042]				
USA SUM * EPL			-0.0320			
			[0.0311]			
USA SUM * EPL (Adj)					-0.0452**	
					[0.0182]	
USA SUM * EPL * EU				-0.0211		
				[0.0138]		
USA SUM * EPL(Adj) * EU						-0.0484***
						[0.0097]
USA SUM * EPL * Transition				-0.0057		
				[0.0146]		
USA SUM * EPL(Adj) * Transition						-0.0361***
						[0.0113]
USA SUM * EPL * LAC				0.0127		
				[0.0182]		
USA SUM * EPL(Adj) * LAC						-0.0450**
						[0.0183]
Observations	940	940	940	940	940	940
Adjusted R-squared	0.55	0.56	0.69	0.69	0.69	0.69

Standard errors in brackets. * significant at 10%, ** significant at 5%, *** significant at 1%. Columns (1) and (2) include region dummies. Columns (3)-(6) include country dummies. USA SUM: sector/size job reallocation in the U.S.; *EU* denotes the OECD European countries; *Transition* denotes the countries in Central and Eastern Europe; LAC denotes the countries in Latin America. EPL is the index of stringency of hiring and firing regulations. EPL (Adj) is the indicator of hiring and firing adjusted to take into account different degrees of enforcement of regulations (see main text).

Table 13 Job flows by firm size – the role of labor and product market regulations (difference-in-difference analysis)

	(1)	(2)	(3)	(4)
Constant	0.1225***	0.0753***	0.1150***	0.0660***
	[0.0126]	[0.0131]	[0.0109]	[0.0147]
USA SUM	0.8379***	0.8579***	0.8401***	0.8371***
	[0.0700]	[0.0409]	[0.0988]	[0.0435]
USA SUM * EPL(Adj)			-0.0546**	
			[0.0203]	
USA SUM * EPL * <20 workers	-0.0499***			
	[0.0124]			
USA SUM * EPL(Adj) * <20 workers		-0.0632***		-0.0540***
		[0.0090]		[0.0139]
USA SUM * EPL * 20-49 Workers	-0.0739***			
	[0.0129]			
USA SUM * EPL(Adj) * 20-49 Workers		-0.0895***		-0.0649***
		[0.0100]		[0.0188]
USA SUM * EPL * 50-99 Workers	-0.0853***			
	[0.0131]			
USA SUM * EPL(Adj) * 50-99 Workers		-0.1012***		-0.0793***
		[0.0104]		[0.0206]
USA SUM * EPL * 100+ Workers	-0.0997***			
	[0.0148]			
USA SUM * EPL(Adj) * 100+ Workers		-0.1140***		-0.0537*
		[0.0133]		[0.0319]
USA SUM * Bus. Reg. (Adj)			0.0235	
			[0.0255]	
USA SUM * Bus. Reg. (Adj) * <20 Workers				-0.0096
				[0.0225]
USA SUM * Bus. Reg. (Adj) * 20-49 Workers				-0.037
				[0.0309]
USA SUM * Bus. Reg. (Adj) * 50-99 Workers				-0.0321
				[0.0338]
USA SUM * Bus. Reg. (Adj) * 100+Workers				-0.1003*
				[0.0530]
Observations	940	940	940	940
Adjusted R-squared	0.73	0.73	0.69	0.73

Standard errors in brackets. * significant at 10%, ** significant at 5%, *** significant at 1%. All regressions include country dummies. *USA SUM*: sector/size job reallocation in the U.S.; *EU* denotes the OECD European countries; *Transition* denotes the countries in Central and Eastern Europe; LAC denotes the countries in Latin America. EPL is the index of stringency of hiring and firing regulations. EPL (Adj) is the indicator of hiring and firing adjusted to take into account different degrees of enforcement of regulations (see main text). Bus. Reg. is the indicator of the stringency of business regulations; Bus. Reg. (adj.) is the same indicator adjusted to take into account different degrees of enforcement of regulations.

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Appendix A Definitions of Institutional Variables

Variable	Definition
Hiring and Firing Practices (Fraser)	Flexibility in hiring and firing (5B(ii)) from Fraser Institute, hiring and firing practices of companies are determined by private contract (World Economic Forum: Global Competitiveness Report); scale [0,10], 10 being the worst
EPL (OECD)	Employment protection legislation, from OECD for OECD countries, from another project on EPL and job flows for transition countries and scaling Fraser hiring and firing practices for LAC;
Starting a New Business (Fraser)	Ease of Starting a New Business (5c(iv)) from Fraser Institute (World Economic Forum: Global Competitiveness Report); scale [0,10], 10 being the worst
Business Regulations (Fraser)	Regulation of business activities (5c) from Fraser Institute (World Economic Forum: Global Competitiveness Report); scale [0,10], 10 being the worst
Regulation (Fraser)	Regulation from Fraser institute (overall economic freedom indicator; includes size of government (1), legal structure and security of property rights (2), access to sound money (3), freedom to trade internationally (4), regulation of credit, labor and business (5)); scale [0,10], 10 being the worst
Law and Order (Fraser)	Integrity of Legal System (2e) from Fraser Institute, which is based on Political Risk Component I (Law and Order) from the International Country Risk Guide; scale [0,10], 10 being the worst

Appendix B Results for Excess Job Reallocation

Table B. 1 Job flows – A baseline difference in difference analysis

	1990s			**1990s, transition late 1990s**		
	(1)	(2)	(3)	(4)	(5)	(6)
Constant	0.1048***	0.1351***	0.1513***	-0.0279***	0.0022	0.0256**
	[0.0094]	[0.0106]	[0.0119]	[0.0090]	[0.0106]	[0.0118]
USA EXC	0.6900***			0.6795***		
	[0.0186]			[0.0181]		
USA EXC * EU		0.5602***			0.5624***	
		[0.0292]			[0.0287]	
USA EXC * Transition		0.7596***			0.7223***	
		[0.0335]			[0.0322]	
USA EXC * LAC		0.7878***			0.7854***	
		[0.0329]			[0.0323]	
USA EXC * <20 Workers			0.5973***			0.5867***
			[0.0270]			[0.0259]
USA EXC * 20-49 Workers			0.4793***			0.4501***
			[0.0376]			[0.0360]
USA EXC * 50-99 Workers			0.4102***			0.3829***
			[0.0429]			[0.0410]
USA EXC * 100+ Workers			0.3491***			0.3311***
			[0.0741]			[0.0712]
Observations	933	933	933	937	937	937
Adjusted R-squared	0.66	0.68	0.69	0.68	0.68	0.71

Standard errors in brackets. * significant at 10%, ** significant at 5%, *** significant at 1%. All regressions include country dummies. USA EXC: sector/size job reallocation in the U.S.; *EU* denotes the OECD European countries; *Transition* denotes the countries in Central and Eastern Europe; LAC denotes the countries in Latin America.

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Table B. 2 Job flows and the role of labor regulations (difference-in-difference analysis)

	(1)	(2)	(3)	(4)	(5)	(6)
Constant	0.1649***	0.1946***	-0.0217*	-0.0104	-0.006	0.0056
	[0.0278]	[0.0292]	[0.0113]	[0.0130]	[0.0113]	[0.0131]
USA EXC	0.6769***		0.8363***	0.6473***	0.8892***	0.8457***
	[0.0516]		[0.2100]	[0.0888]	[0.1267]	[0.0507]
USA EXC * EU		0.5542***				
		[0.0449]				
USA EXC * Transition		0.7208***				
		[0.0566]				
USA EXC * LAC		0.7893***				
		[0.1196]				
EPL	-0.0193***	-0.0192***				
	[0.0035]	[0.0035]				
USA EXC * EPL			-0.0279			
			[0.0322]			
USA EXC * EPL (Adj)					-0.0479*	
					[0.0225]	
USA EXC * EPL * EU				-0.0137		
				[0.0147]		
USA EXC * EPL(Adj) * EU						-0.0496***
						[0.0100]
USA EXC * EPL * Transition				0.0101		
				[0.0156]		
USA EXC * EPL(Adj) * Transition						-0.0270**
						[0.0119]
USA EXC * EPL * LAC				0.0319*		
				[0.0190]		
USA EXC * EPL(Adj) * LAC						-0.0248
						[0.0185]
Observations	937	937	937	937	937	937
Adjusted R-squared	0.58	0.59	0.68	0.69	0.68	0.69

Standard errors in brackets. * significant at 10%, ** significant at 5%, *** significant at 1%. Columns (1) and (2) include region dummies. Columns (3)-(6) include country dummies. USA EXC: sector/size job reallocation in the U.S.; *EU* denotes the OECD European countries; *Transition* denotes the countries in Central and Eastern Europe; LAC denotes the countries in Latin America. EPL is the index of stringency of hiring and firing regulations. EPL (Adj) is the indicator of hiring and firing adjusted to take into account different degrees of enforcement of regulations (see main text).

Table B. 3 Job flows by firm size – the role of labor and product market regulations (difference-in-difference analysis)

	(1)	(2)	(3)	(4)
Constant	0.0332***	0.0456***	0.0004	0.0490***
	[0.0128]	[0.0140]	[0.0081]	[0.0161]
USA EXC	0.8424***	0.8897***	0.8605***	0.8604***
	[0.0769]	[0.0436]	[0.1181]	[0.0464]
USA EXC * EPL(Adj)			-0.0619**	
			[0.0254]	
USA EXC * EPL * <20 workers		-0.0432***		
	[0.0137]			
USA EXC * EPL(Adj) * <20 workers		-0.0612***		-0.0696***
		[0.0100]		[0.0167]
USA EXC * EPL * 20-49 Workers		-0.0653***		
	[0.0144]			
USA EXC * EPL(Adj) * 20-49 Workers		-0.0846***		-0.0876***
		[0.0112]		[0.0226]
USA EXC * EPL * 50-99 Workers		-0.0772***		
	[0.0148]			
USA EXC * EPL(Adj) * 50-99 Workers		-0.0977***		-0.1140***
		[0.0119]		[0.0255]
USA EXC * EPL * 100+ Workers		-0.0823***		
	[0.0178]			
USA EXC * EPL(Adj) * 100+ Workers		-0.0980***		-0.0881**
		[0.0167]		[0.0433]
USA EXC * Bus. Reg. (Adj)			0.0342	
			[0.0320]	
USA EXC * Bus. Reg. (Adj) * <20 Workers				0.0245
				[0.0270]
USA EXC * Bus. Reg. (Adj) * 20-49 Workers				0.0151
				[0.0369]
USA EXC * Bus. Reg. (Adj) * 50-99 Workers				0.0385
				[0.0417]
USA EXC * Bus. Reg. (Adj) * 100+Workers				-0.0074
				[0.0711]
Observations	937	937	937	937
Adjusted R-squared	0.71	0.71	0.68	0.71

Standard errors in brackets. * significant at 10%, ** significant at 5%, *** significant at 1%. All regressions include country dummies. *USA EXC*: sector/size excess job reallocation in the U.S.; *EU* denotes the OECD European countries; *Transition* denotes the countries in Central and Eastern Europe; LAC denotes the countries in Latin America. EPL is the index of stringency of hiring and firing regulations. EPL (Adj) is the indicator of hiring and firing adjusted to take into account different degrees of enforcement of regulations (see main text). Bus. Reg. is the indicator of the stringency of business regulations; Bus. Reg. (adj.) is the same indicator adjusted to take into account different degrees of enforcement of regulations.